

Electronic & Magnetic Materials & Devices



- Major Tools**
- Electron beam evaporator and sputtering deposition (Oct 2007)
 - Luminescence spectrometer
 - Magnetometry (PPMS & MPMS)
 - Oxide MBE (Fall 2007)
 - Raman spectrometer (Fall 2007)
 - Rheometer
 - Scanning probe microscope
 - Solar simulator (June 2007)
 - SPM/SEM combined (Omicron UHV)
 - TGA/DSC
 - UV-Vis-NIR
 - X-ray diffractometer

Group Leader

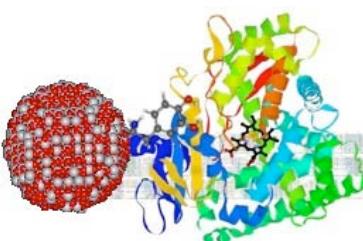
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Group Members

- Anand Bhattacharya, anand@anl.gov
 - oxide MBE
- Matthias Bode, mbode@anl.gov
 - spin-polarized STM
- Kristen Buchanan, buchanan@anl.gov
 - magnetometry
- Seth Darling, darling@anl.gov
 - AFM/SPM, lithographic self-assembly
- Axel Hoffman, hoffman@anl.gov
 - magnetism
- Xiao-Min Lin, xmlin@anl.gov
 - synthesis of nanocrystal building blocks

Nanobio Interfaces



Major Tools

- Electrochemical Workstation BAS 100B/W
- Electron paramagnetic resonance
- Functionalization, electro- & photochemical
- HPLC
- Laser Scanning Confocal Microscope
- PCR (available Dec. 2007)
- Post-self-assembly processing
- Schlenk Lines
- Solvent Purification
- Spectroelectrochemistry
- Synthesis & surface modification of nanoparticles

Group Leader

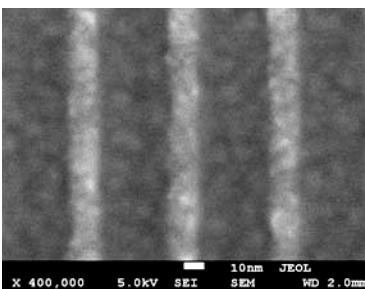
Tijana Rajh
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Group Members

- Integrating “soft” biological molecules with “hard” inorganic nano-architectures is applied to catalysis, sensors, information storage, artificial vision, biological intervention, etc.
- Tijana Rajh, rajh@anl.gov
 - EPR, quantum dots, semiconductor-bio composites
 - Elena Rozhkova, rozhkova@anl.gov
 - bio(in)organic, biological chemistry, synthetic biology
 - Elena Shevchenko
 - 2- and 3-D nanoparticle assembly

Nanofabrication



Major Tools

- JEOL 9300 FS, 100 KV Electron Beam Lithography
- Raith 150, 30 KV Electron Beam Lithography
- FEI Nova 600 NanoLab DualBeam FIB/SEM
- Nanonex NX-3000 Step and Repeat Nanoimprint
- Direct write optical lithography (Oct 2007)
- Interferometric lithography (Oct 2007)
- Resist processing
- Plasma processing (chlorine, fluorine chambers barrel asher system)
- Wet Chemistry & Metrology
- Deposition (ebeam evaporator and sputtering, MOCVD)
- Nanocrystalline diamond deposition (Oct 2007)

Group Leader

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Group Members

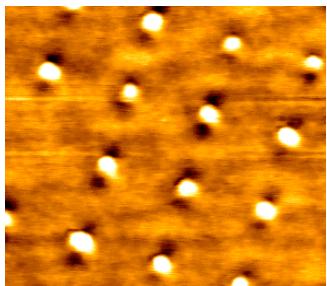
- Orlando Auciello, auciello@anl.gov
 - oxide and nanocarbon films, MEMS, NEMS
- Ralu Divan, divan@anl.gov
 - lithography, nanogels, MEMS/NEMS technology
- Valentina Kutepova, kutepova@anl.gov
 - cleanroom manager
- Derrick Mancini, mancini@anl.gov
- Leo Ocola, ocola@anl.gov
 - nanofabrication, electron beam lithography
- Anirudha Sumant, sument@anl.gov
 - UNCD/PZT for diamond-based NEMS



Center for Nanoscale Materials

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Nanophotonics



Major Tools

- Aperture NSOM
 - CW laser excitation
 - ultrafast laser excitation
- Apertureless NSOM
 - CW laser excitation
 - ultrafast laser excitation
- Colloidal synthesis
- Confocal Raman microscopy (Aug 2007)
- NSOM fiber puller
- Time-correlated single photon counting

Group Leader

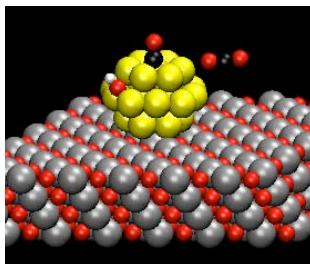
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Group Members

- David Gosztola, gosztola@anl.gov
 - laser spectroscopy and electrochemistry
- Matthew Pelton, pelton@anl.gov
 - physical phenomena of light interacting with nanomaterials
- Yugang Sun, ygsun@anl.gov
 - synthesis/fab of functional nanomaterials
 - optical, electronic, mechanical properties
- Gary Wiederrecht, wiederrecht@anl.gov
 - new microscopies with spatial resolution below the diffraction limit

Theory & Modeling



Major Tools

- Access to computational codes
 - Density-functional-based tight-binding electronic structure package
 - MPI-based parallel versions of nanophotonics and tight-binding codes
 - Time-domain nanophotonics simulation
 - Web-based magneto-optic simulation
- Access to Argonne computer facilities
- Support for experimental projects
- Support for theoretical projects

Group Leader

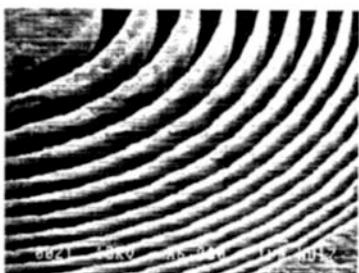
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Group Members

- Larry Curtiss, curtiss@anl.gov
 - quantum chemical studies
- Jeff Greeley, jgreeley@anl.gov
 - nanocatalysis
- Michael Sternberg, sternberg@anl.gov
 - software development
- Stephen Gray (affiliation), gray@tcg.anl.gov
 - quantum dynamics, FDTD

X-ray Microscopy



Major Tools

- Hard X-ray nanoprobe beamline, sector 26 of APS (rampup Oct 2007 – Sept 2008)
- Full field transmission microscopy (8-12 keV)
 - 2D imaging in absorption contrast and phase contrast (Zernicke)
 - Tomography
- Scanning probe microscopy (8-12 keV in 2007, 3-30 keV in 2008)
 - Nanodiffraction (2007)
 - X-ray fluorescence microscopy (2007)
 - Differential phase contrast imaging (2008)
 - Magnetic imaging (2008)
 - Time resolved experiments (2008)

Group Leader

Jorg Maser
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Group Members

- Martin Holt, mvholt@aps.anl.gov
- Jorg Maser, maser@anl.gov
 - x-ray microscopy, x-ray optics
- Brian Stephenson, stephenson@anl.gov
- Robert Winarski, winarski@aps.anl.gov
 - x-ray imaging